



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/777,368

02/12/2004

Andrew J. Ritz

MS306248.1/MSFTP553US

5086

27195

7590

09/21/2006

AMIN. TUROCY & CALVIN, LLP  
24TH FLOOR, NATIONAL CITY CENTER  
1900 EAST NINTH STREET  
CLEVELAND, OH 44114

EXAMINER

LEE, CHUN KUAN

ART UNIT

PAPER NUMBER

2181

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/777,368

Applicant(s)

RITZ ET AL.

Examiner

Chun-Kuan (Mike) Lee

Art Unit

2181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

FRITZ FLEMING  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

7/18/2006

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-5, 7-17 and 19-22 have been considered but are moot in view of the new ground(s) of rejection. Claim rejections of claims 10, 11 and 16 under 35 U.S.C. 112 second paragraph are maintained. Claim rejections of claims 1-5, 7-16 and 21-22 under 35 U.S.C. 101 are maintained and claim rejections of claims 17 and 19-20 under 35 U.S.C. 101 are withdrawn. Currently, claims 6 and 18 are canceled and claims 1-5, 7-17 and 19-22 are pending for examination.

2. In responding to applicant's argument regarding the rejections of claims 10, 11 and 16 under 35 U.S.C. 112 second paragraph that the amendments made to claims 10, 11 and 16 to recite the generic name "PCI Express" as "Peripheral Component Interface Express" would alleviate the indefiniteness of utilizing the trademark/trade name as the claimed limitation, as stated on page 13, Section II. Applicant's arguments have fully been considered, but are found not to be persuasive.

Even though the trademark "PCI Express" has been expressly spelled out as "Peripheral Component Interface Express," the claimed limitation is still referred to the trademark, therefore the claims 10, 11 and 16 remain indefinite.

3. In responding to applicant's argument regarding the rejection of independent claims 1, 14 and 21-22 under 35 U.S.C. 101 that the Federal Circuit in *Eolas Techs.*,

Art Unit: 2181

*Inc. v. Microsoft Corp.* establishing that software code along is statutory subject matter, and further more, the computer implemented system by itself is statutory subject matter as stated on page 14, ll. 1-18. Applicant's arguments have fully been considered, but are found not to be persuasive.

The Federal Circuit in *Eolas Techs., Inc. v. Microsoft Corp.* establishing that "software code along qualifies as an invention eligible for patenting under these categories, at least as processes," as the software code along is statutory subject matter only if the claim is a method claim with steps that are accomplished with software routines. But the instant claims are directed towards software per se for something other than a process claim, such as "a system," therefore, the "system" by itself is not statutory subject matter, as the specification appears to define the "system" as software along (Specification, page 5, ll. 25-30). Similar response will also apply toward the claimed limitation "components" for independent claim 21, wherein the "component" may be just "a program" (Specification, page 5, ll. 30-29).

4. In responding to applicant's argument that Safranek in combination with Kondratiev do not teach the amended independent claims 1, 14 and 17, because Safranek in combination with Kondratiev do not teach the access table with the access information that provide both allowed and disallowed access information including access type, therefore Safranek and Kondratiev fails to teach or suggest the claimed limitation that at least one access attribute indicating one of read, read and write, write, and no access for a combination of source and memory range identified by the at least

Art Unit: 2181

one source identifier and the at least one memory address, as stated on page 17.

Applicant's arguments have fully been considered, but are found not to be persuasive.

The specification does not appear to disclose the requirement that the access table with the access information to provide both allowed and disallowed access information including access type, but rather discloses the access table with the access information that provide "allowed" and/or "disallowed" access information including access type (Abstract and Specification, page 2, ll. 23-25). Further more, the corresponding independent claims utilized the claim limitation "access attribute indicating one of read, read and write, write, and no access," therefore, it appears that the independent claims required "one of" allowed (i.e. read, read and write and write) and disallowed (i.e. no access) access information. In conclusion, as stated in applicant's remarks, the combined references do teach a table indicating memory ranges that are allowed access (Remarks, page 17).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 10, 11 and 16 contain the trademark/trade name "Peripheral Component Interface (PCI) Express". Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the

Art Unit: 2181

trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe bus conforming to the PCI standard and, accordingly, the identification/description is indefinite.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title:

6. Claims 1-5, 7-16 and 21-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 1-5, 7-16 and 22, the claimed subject matter as stated refers to a "system", wherein the "system", under reasonable interpretation in view of the specification on page 5, lines 25-30, can be view as a software along, wherein the software along is non-statutory subject matter.

As per claim 21, the claimed subject matter as stated refers to a "component", wherein the "component", under reasonable interpretation in view of the specification on page 5, lines 25-30, can be view as a program (i.e. software) along, wherein the program along is non-statutory subject matter; and further more, "a data field" is also non-statutory subject matter.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-5, 7-17 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Safranek et al. (US Pub 2004/0193755) in view of Kondratiev et al. (US Patent 6,922,740).

8. As per claim 1, 14, 17 and 21-22, Safranek teaches a computer implemented direct memory access memory corruption detection system and method comprising the following computable executable components:

receiving a request for a direct memory access transaction, the request comprising a least one memory address ([0014]-[0021]);

a memory controller (northbridge 117 of Fig. 1) that includes an access table (access data) that stores access information (access information stored in NoDMA table 103 and NoDMA cache 109 of Fig. 1) associated with memory (Fig. 1, ref. 101),

the memory controller employs the access information and the request to determine whether the requested direct memory access is permitted and rejects the requested direct memory access if it is not permitted ([0014]-[0016]); and

a data field comprising a corrected platform error event ([0034] and [0038]), the corrected platform error event being based, at least in part, upon a determination that a requested direct memory access is not permitted ([0034] and [0038]), the determination being based, at least in part, upon access information stored in an access table (NoDMA table cache in Fig. 3) and the requested direct memory access ([0011]-[0021]).

Safranek does not teach the direct memory access memory corruption detection system and method comprising:

wherein the request further comprising a source identifier and a transaction access attribute;

wherein the access information comprising at least one source identifier, at least one memory address and at least one access attribute, the at least one access attribute indicating one of read, read and write, write, and no access for a combination of source and memory range identified by the at least one source identifier and the at least one memory address; and

a device driver that programs a device for a direct memory access operation, and, provides the access information to the memory controller via a direct memory access application interface.

Kondratiev teaches a system and a method comprising:

an access control list (ACL) (Fig. 2, ref. 210) (i.e. access table), the access table comprising a device ID (i.e. source identifier field), an read access attribute field with memory address range and an write access attribute field with memory address range (Fig. 2 and col. 4, ll. 53-65);



wherein the device ID being associated with a device (I/O device 140-1 of Fig. 1 and device ID of Fig. 2); and

a bus master (i.e. device driver) that programs (program by invoking a function to request DMA access) the device for the direct memory access operation, and provides the access information to the memory controller via the direct memory access application interface (col. 4, ll. 6-26 and col. 6, ll. 43-53).

It would have been obvious to one of ordinary skill in this art, at the time of invention was made to include Kondratiev's device ID, read and write access attribute field with memory address range and the bus master into Safranek's DMA memory corruption detection system. The resulting combination of the references further teaches the DMA memory corruption detection system comprising

the request further including the device ID and the read and write access attribute;

wherein the access information including the device ID, the read access attribute with memory range and the write access attribute with memory range, therefore indicating one of read, read and write, and write identified with the combination of the device ID and the corresponding read access attribute with memory range and write access attribute with memory range; and

a bus master that invoking the function to request DMA access for the device for the direct memory access operation, and provides the access information to the memory controller via the direct memory access application interface.

Therefore, it would have been obvious to combine Kondratiev with Safranek for the benefit of increase security and reliability for accessing DMA (Kondratiev, col. 7, ll. 30-41).

9. As per claims 2-3, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Kondratiev further teaches the direct memory access memory corruption detection system comprising the access information comprising a direct memory access request, and wherein the direct memory access request comprising a transaction type (e.g. read-write access) (Kondratiev, Fig. 2 and col. 4, ll. 23-26).

10. As per claims 4-5, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Kondratiev further teaches the direct memory access memory corruption detection system comprising the direct memory access request comprising a source identifier (e.g. device ID), and wherein the source identifier being associated with a device (I/O device 140-1 of Fig. 1 and device ID of Fig. 2) (Kondratiev, col. 4, ll. 40-65).

11. As per claim 7, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising wherein the access information comprising at least one permitted memory address (Safranek, [0014] and [0021]), wherein certain

Art Unit: 2181

segments of the memory do not have access restriction, therefore request for access are allowed.

12. As per claim 8, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising wherein the access information comprising at least one disallowed memory address (Safranek, [0014] and [0021]), wherein certain segments of the memory have access restriction, therefore request for access are denied.

13. As per claim 9, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising wherein the request comprising a read action or a write action (Safranek, [0015]).

14. As per claim 10, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising wherein the request comprising a Peripheral Component Interface Express bus transaction (Safranek, [0017] and [0019]).

15. As per claim 11, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory

Art Unit: 2181

corruption detection system comprising wherein the memory controller coupled to a device through a Peripheral Component Interface Express bus, the device providing the request (Safranek, [0017] and [0019]).

16. As per claim 12, Safranek and Kondratiev teach all the limitation of claim 1 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising wherein the memory controller further providing error information, if the requested direct memory access is not permitted (Safranek, Fig. 4; [0034] and [0038]), wherein the error is logged and can be utilized for subsequent analyzing.

17. As per claim 13, Safranek and Kondratiev teach all the limitation of claim 12 as discussed above, where Safranek further teaches the direct memory access memory corruption detection system comprising the error information comprising source information associated with the requested direct memory access.

18. As per claim 15, Safranek and Kondratiev teach all the limitations of claim 14 as discussed above, where Kondratiev further teaches the direct memory access memory corruption detection system further comprising the stored access information comprising a range of physical memory (access range), a source identifier (device ID), and an access attribute (read and write) (Kondratiev, Fig. 2).

Art Unit: 2181

19. As per claim 16, Safranek and Kondratiev teach all the limitations of claim 14 as discussed above, where Safranek teaches the direct memory access memory corruption detection system comprising wherein the request comprising a Peripheral Component Interface Express bus transaction (Safranek, [0017] and [0019]).

20. As per claim 19, Safranek and Kondratiev teach all the limitations of claim 17 as discussed above, where Kondratiev further teaches the method that facilitates detection of direct memory access memory corruption comprising storing access information in a access data store, the access information comprising a source identifier (device ID), at least one memory address (access range) and an access attribute (read and write) (Kondratiev, ACL 210 Fig. 2).

21. As per claim 20, Safranek and Kondratiev teach all the limitations of claim 17 as discussed above, where Safranek further teaches the method that facilitates detection of direct memory access memory corruption comprising a computer readable medium having stored thereon computer executable instructions for carrying out the method (Safranek, [0039]).

Art Unit: 2181

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chun-Kuan (Mike) Lee whose telephone number is (571) 272-0671. The examiner can normally be reached on 8AM to 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz M. Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2181

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.K.L.  
09/18/2006

  
FRITZ FLEMING  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100  
9/18/2006